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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Application of	:	Customer Number: 46320
	:	
Jeffery CHASE, et al.	:	Confirmation Number: 8866
	:	
Application No.: 10/733,659	:	Group Art Unit: 2186
	:	
Filed: December 11, 2003	:	Examiner: H. Patel
	:	
For:		AUTONOMIC EVALUATION OF WEB WORKLOAD CHARACTERISTICS FOR SELF-CONFIGURATION MEMORY ALLOCATION

**APPEAL BRIEF**

Mail Stop Appeal Brief - Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

This Appeal Brief is submitted in support of the Notice of Appeal filed December 11, 2006, wherein Appellants appeal from the Examiner's rejection of claims 1-2, 4-8, 11-12, and 14-16.

**I. REAL PARTY IN INTEREST**

This application is assigned to IBM Corporation by assignment recorded on December 11, 2003, at Reel 014817, Frame 0905.

**II. RELATED APPEALS AND INTERFERENCES**

Appellants are unaware of any related appeals and interferences.

### **III. STATUS OF CLAIMS**

Claims 1-16 are pending in this Application. Claims 1-2, 4-8, 11-12, and 14-16 have been three-times rejected, and claims 3, 9-10, and 13 have been indicated as being allowable. It is from the multiple rejection of claims 1-2, 4-8, 11-12, and 14-16 that this Appeal is taken.

### **IV. STATUS OF AMENDMENTS**

The claims have not been amended subsequent to the imposition of the Third Office Action dated September 11, 2006 (hereinafter the Third Office Action).

### **V. SUMMARY OF CLAIMED SUBJECT MATTER**

Referring to Figure 2 and to independent claims 1 and 11, a method for selecting a cache memory allocation to provide an optimized target cache hit rate in a caching component of a content delivery system is disclosed. In blocks 220 and 230, a current cache size and a contemporaneously experienced trace footprint is identified (lines 5-8 of paragraph [0024] of Appellants' disclosure). In block 240, a hit rate produced in response to the current cache size and the contemporaneously experienced trace footprint is determined (lines 8-9 of paragraph [0024]). In block 250, a Zipf alpha coefficient for the current cache size, trace footprint and hit rate is computed (lines 1-5 of paragraph [0025]). In block 260, an optimal hit rate is selected. (line 5 of paragraph [0025]). In block 280, an optimal cache size for the Zipf alpha coefficient, trace footprint and optimal hit rate is computed (lines 6-8 of paragraph [0025]).

Referring to Figure 1 and to independent claim 7, a system for selecting a cache memory allocation to provide an optimized target cache hit rate in a caching component of a content delivery system is disclosed. The system includes a Zipf alpha coefficient parameter

computation processor 180 (paragraphs [0020]-[0022]) coupled to an optimal cache size computation processor 190 (lines 1-5 of paragraph [0023]) communicatively linked to a cache 150 in the content delivery system (lines 6-8 of paragraph [0023]).

## **VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

1. Claims 1, 4-6, 11, and 14-16 were rejected under 35 U.S.C. § 102 for anticipation based upon "Workloads: PolyMix -2" (hereinafter PolyMix); and
2. Claims 2, 7-8, and 12 were rejected under 35 U.S.C. § 103 for obviousness based upon PolyMix.

## **VII. ARGUMENT**

### **THE REJECTION OF CLAIMS 1, 4-6, 11, AND 14-16 UNDER 35 U.S.C. § 102 FOR ANTICIPATION BASED UPON POLYMIX**

For convenience of the Honorable Board in addressing the rejections, claims 4-6, 11, and 14-16 stand or fall together with independent claim 1.

On pages 3 and 4 of the Request for Reconsideration filed June 30, 2006, Appellants made the following arguments. The factual determination of anticipation under 35 U.S.C. § 102 requires the identical disclosure of each element of a claimed invention in a single reference.<sup>1</sup> As part of this analysis, the Examiner must (a) identify the elements of the claims, (b) determine the meaning of the elements in light of the specification and prosecution history, and (c) identify

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<sup>1</sup> In re Rijckaert, 9 F.3d 1531, 28 USPQ2d 1955 (Fed. Cir. 1993); Lindermann Maschinenfabrik GMBH v. American Hoist & Derrick Co., 730 F.2d 1452, 221 USPQ 481 (Fed. Cir. 1984).

corresponding elements disclosed in the allegedly anticipating reference.<sup>2</sup> This burden has not been met. Moreover, the Examiner has failed to clearly designate the teachings in PolyMix being relied upon the statement of the rejection. In this regard, the Examiner's rejection under 35 U.S.C. § 102 also fails to comply with 37 C.F.R. § 1.104(c), which reads:

In rejecting claims for want of novelty or for obviousness, the examiner must cite the best references at his or her command. When a reference is complex or shows or describes inventions other than that claimed by the applicant, the particular part relied on must be designated as nearly as practicable. The pertinence of each reference, if not apparent, must be clearly explained and each rejected claim specified.

### Claim 1

Despite this requirement, the Examiner's statement of the rejection ignores the claimed limitations. For example, claims 1 and 11 each recite a "current cache size" and a "contemporaneously experienced trace footprint." The Examiner's statement of the rejection only addresses a "cache size" and "a trace" without any mention that the cache size is current or that the trace footprint is contemporaneously experienced. Moreover, it does not appear that PolyMix teaches these limitations because "PolyMix -2" is described as "a new model for simulating proxy load" (emphasis added).

Moreover, Appellants note the following statement made by the Examiner:

The steps of selecting an optimal hit rate and computing an optimal cache size are inherent in the WEB disclosure because from the table, for any given/selected "optimal" hit rate/ratio, the optimal cache size is calculated as shown in the "cache size" column. For example, if the selected hit rate/ratio is 8.5, then the optimal cache size for that selected hit rate is 10.

Appellants submit that the Examiner's reliance upon the doctrine of inherency to disclose the claimed computing and selecting steps is misplaced. Inherency may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of

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<sup>2</sup> Lindermann Maschinenfabrik GMBH v. American Hoist & Derrick Co., *supra*.

circumstances is not sufficient to establish inherency.<sup>3</sup> To establish inherency, the extrinsic evidence must make clear that the missing function must necessarily be present in the thing described in the reference, and that the necessity of the feature's presence would be so recognized by persons of ordinary skill.<sup>4</sup> Furthermore, reference is made to ex parte Schricker,<sup>5</sup> in which the Honorable Board of Patent Appeals and Interferences stated the following:

However, when an examiner relies on inherency, it is incumbent on the examiner to point to the "page and line" of the prior art which justifies an inherency theory. Compare, In re Rijckaert, 9 F.3d 1531, 1533, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993) (when the PTO asserts that there is an explicit or implicit teaching or suggestion in the prior art, it must indicate where such a teaching or suggestion appears in the prior art); In re Yates, 663 F.2d 1054, 107, 211 USPQ 1149, 1151 (CCPA 1981).

The Examiner did not discharge that burden of indicating where such a teaching or suggestion appears in the prior art. Thus, the Examiner has not established that these limitation are inherently disclosed by PolyMix.

The Examiner's response to these arguments is found on page 6 of the Third Office Action and reproduced below:

With respect to (a) and (b), even though the table disclosed on page 4 of 8 of the WEB prior art does not list every single possible sizes as a current cache size to calculate the hit ratio, it (i.e. a BIG table having all cache sizes along with contemporaneously experienced trace footprint) can be derived from the graphical version of the table disclosed by WEB. In other words, an optimal cache size for the targeted hit rate/ratio can be derived from the graphical version of the table disclosed by WEB.

As best understood, the Examiner is asserting that if the table on page 4 of 8 of PolyMix was made "BIG" such that "all cache sizes along with contemporaneous experienced trace footprint"

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<sup>3</sup> In re Rijckaert, 9 F.3d at 1534, 28 USPQ2d at 1957 (reversed rejection because inherency was based on what would result due to optimization of conditions, not what was necessarily present in the prior art); In re Oelrich, 666 F.2d 578, 581-82, 212 USPQ 323, 326 (CCPA 1981).

<sup>4</sup> Finnegan Corp. v. ITC, 180 F.3d 1354, 51 USPQ2d 1001 (Fed. Cir. 1999); In re Robertson, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999); Continental Can Co. USA v. Monsanto Co., 20 USPQ 2d 1746 (Fed. Cir. 1991); Ex parte Levy, 17 USPQ2d 1461 (BPAI 1990).

<sup>5</sup> 56 USPQ2d 1723, 1725 (BPAI 2000).

were generated, then the claimed "current cache size" and "contemporaneously experienced trace footprint" would be disclosed.

As noted above, the factual determination of anticipation under 35 U.S.C. § 102 requires the identical disclosure of each element of a claimed invention in a single reference. Moreover, this disclosure can either be explicit or inherent. As already argued and not refuted by the Examiner, PolyMix fails to explicitly identically disclose these features. Instead, the Examiner asserts that these features "can be derived" from the teachings of PolyMix. However, as also already argued, for an element to be inherently disclosed, the missing features must necessarily be present. The Examiner, however, has not establish that these missing features must necessarily be present in PolyMix. Instead, the Examiner only asserts that these features could be disclosed by PolyMix. Therefore, Appellants maintain their prior argument that PolyMix fails to identically disclose, either explicitly or inherently, all of the claimed limitations.

**THE REJECTION OF CLAIMS 2, 7-8, AND 12 UNDER 35 U.S.C. § 103 FOR OBVIOUSNESS  
BASED UPON POLYMIX**

For convenience of the Honorable Board in addressing the rejections, claims 2 and 12 stand or fall together with independent claim 1; and claim 8 stands or falls together with claim 7.

Claims 2 and 12 respectively depend from independent claims 1 and 11, and Appellants incorporate herein the arguments previously advanced in traversing the imposed rejection of claims 1 and 11 under 35 U.S.C. § 102 for anticipation based upon PolyMix.

With regard to claim 7, on pages 5 and 6 of the Second Response, Appellants noted that the Examiner admitted that PolyMix fails to identically disclose the claimed invention. The Examiner then asserted:

However, it would have been obvious to one of ordinary skill in the art at the time of the current invention was made to implement this method/model steps taught by WEB into a system and connect it via a communicative link as claimed so the system can be used to calculate the optimum cache size for one or more servers(s) without running the software simulation.

Appellants note that the Examiner's asserted motivation to combine is absent any factual support. As previously noted, PolyMix teaches a model for simulating proxy load, not a system for selecting a cache memory allocation to provide an optimized target cache hit rate in a caching component of a content delivery system. Nowhere has the Examiner pointed to any teachings or suggestions that the simulation model taught by PolyMix can be employed in the claimed system. Since the Examiner's assertion is not derived from the teachings or suggestions of the applied prior art, the only apparent teaching, from which the Examiner's assertion can be derived, is in Appellants' disclosure, which, of course, can not be properly relied upon by the Examiner to support the ultimate legal conclusion of obviousness under 35 U.S.C. § 103.<sup>6</sup>

The Examiner's response to these arguments is the identical to the response that Appellants have already reproduced above. This response, however, does not address the issues raised by Appellants with regard to claim 7. Therefore, Appellants maintain their previously-presented argument with regard to claim 7.

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<sup>6</sup> Panduit Corp. v. Dennison Mfg. Co., 774 F.2d 1082, 227 USPQ 337 (Fed. Cir. 1985).



Conclusion

Based upon the foregoing, Appellants respectfully submit that the Examiner's rejections under 35 U.S.C. §§ 102, 103 based upon the applied prior art not viable. Appellants, therefore, respectfully solicit the Honorable Board to reverse the Examiner's rejection under 35 U.S.C. §§ 102, 103.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due under 37 C.F.R. §§ 1.17, 41.20, and in connection with the filing of this paper, including extension of time fees, to Deposit Account 09-0461, and please credit any excess fees to such deposit account.

Date: February 21, 2007

Respectfully submitted,

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## **VIII. CLAIMS APPENDIX**

1. A method for selecting a cache memory allocation to provide an optimized target cache hit rate in a caching component of a content delivery system, the method comprising the steps of:

identifying a current cache size and a contemporaneously experienced trace footprint;  
determining a hit rate produced in response to said current cache size and said contemporaneously experienced trace footprint;  
computing a Zipf alpha coefficient for said current cache size, trace footprint and hit rate;  
selecting an optimal hit rate; and,  
further computing an optimal cache size for said Zipf alpha coefficient, trace footprint and optimal hit rate.

2. The method of claim 1, further comprising the step of reconfiguring the cache memory allocation based upon said optimal cache size.

4. The method of claim 1, wherein said determining step comprises parsing a log of server activity to identify said hit rate.

5. The method of claim 1, wherein said identifying step comprises the step of identifying a current cache size and a contemporaneously experienced trace footprint for a cluster of servers.

6. The method of claim 1, wherein said identifying step comprises the step of identifying a current cache size and a contemporaneously experienced trace footprint for a single content delivery server.

7. A system for selecting a cache memory allocation to provide an optimized target cache hit rate in a caching component of a content delivery system, the system comprising a Zipf alpha coefficient parameter computation processor coupled to an optimal cache size computation processor communicatively linked to a cache in the content delivery system.

8. The system of claim 7, further comprising a communicative linkage between said Zipf alpha parameter computation processor and a server log storing statistics related to a hit rate for said cache over which said hit rate can be communicated to said Zipf alpha parameter computation processor.

11. A machine readable storage having stored thereon a computer program for selecting a cache memory allocation to provide an optimized target cache hit rate in a caching component of a content delivery system, the computer program comprising a routine set of instructions which when executed cause the machine to perform the steps of:

identifying a current cache size and a contemporaneously experienced trace footprint;  
determining a hit rate produced in response to said current cache size and said contemporaneously experienced trace footprint;  
computing a Zipf alpha coefficient for said current cache size, trace footprint and hit rate;  
selecting an optimal hit rate; and,

further computing an optimal cache size for said Zipf alpha coefficient, trace footprint and optimal hit rate.

12. The machine readable storage of claim 11, further comprising the step of reconfiguring the cache memory allocation based upon said optimal cache size.

14. The machine readable storage of claim 11, wherein said determining step comprises parsing a log of server activity to identify said hit rate.

15. The machine readable storage of claim 11, wherein said identifying step comprises the step of identifying a current cache size and a contemporaneously experienced trace footprint for a cluster of servers.

16. The machine readable storage of claim 11, wherein said identifying step comprises the step of identifying a current cache size and a contemporaneously experienced trace footprint for a single content delivery server.

**IX. EVIDENCE APPENDIX**

No evidence submitted pursuant to 37 C.F.R. §§ 1.130, 1.131, or 1.132 of this title or of any other evidence entered by the Examiner has been relied upon by Appellants in this Appeal, and thus no evidence is attached hereto.

**X. RELATED PROCEEDINGS APPENDIX**

Since Appellants are unaware of any related appeals and interferences, no decision rendered by a court or the Board is attached hereto.